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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/756,814	01/13/2004	James J. Spilker JR.	RSM051001	1515

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EXAMINER	
FOTAKIS, ARISTOCRATIS	
ART UNIT	**PAPER NUMBER**
2611	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/756,814	SPILKER, JAMES J.	
	Examiner	Art Unit	
	Aristocratis Fotakis	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *13 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 - 20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 - 20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *01/17/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1 – 20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The nature of Applicant's invention relates to symbol clock recovery in ATSC DTV receiving apparatus. In order for this function to occur one of the requirements of independent claims 1, 6, 11 and 16 is to have a delay unit adapted to delay the baseband signal and a multiplier for multiplying the baseband signal with the delayed baseband signal. In reviewing the specification, figure 15 demonstrates the delay apparatus for recovering the clock signal for double sideband signals where its specifically mentioned that the delay apparatus does not apply to signals such as the ATSC DTV signal (single-sideband signal) (Paragraphs 0152 – 0153) and it would be impossible to generate the 10.76 MHz symbol clock using this technique (Paragraph 0154, page 10). Figure 18 shows an ATSC DTV receiving apparatus using the above technique. There is no guidance in the specification to allow of one of skill in the art to

use the delay apparatus in an ATSC DTV receiver for symbol clock recovery, since no information was provided on how to overcome the above problems. Since the specification could not provide any information on how to use the delay apparatus on an ATSC DTV receiver, it would be unpredictable to practice Applicant's claimed invention and therefore require an undue amount of experimentation to make and use the claimed invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1 - 2, 5 - 7, 10 – 12, 15 – 17 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bradley et al. (US 6,483,885) in view of Scarpa et al. (US 5,673,293).

Re claim 1, 6, 11 and 16 Bradley teaches of a method executed by a computer (Col 9, Lines 10 – 24) and apparatus for recovering a symbol clock signal, the apparatus comprising: a downconverter (#14, RF unit, Fig.1) adapted to coherently downconvert the signal to a baseband signal (Col 3, Lines 54 – 56); a delay unit (#42, Fig.3) adapted to delay the baseband signal (Col 4, Lines 60 –67 to Col 5, Lines 1 – 14); a multiplier (#40, Fig.3) adapted to multiply the baseband signal and the delayed baseband signal (Col 5, Lines 1 – 14); a phase-locked loop (#32, synchronizer corrector, Fig.3) to generate the symbol clock signal based on an output of the band-pass filter (Col 4, Lines 28 – 36 and Lines 50 – 59). However, Bradley does not teach of the use of a band-pass filter before the phase-locked loop.

Scarpa teaches of a receiving apparatus to demodulate QAM and VSB signals. The QAM demodulator comprises of a tuner module (#110, downconverter, Fig.2), a QAM filter circuit (#220) and a timing recovery circuit (#240) (Col 8, Lines 11 – 14). The QAM filter circuit (#220) includes a Nyquist filter (#222,Fig.2) i.e., a matched complex passband filter that is used for pulse shaping the digital television signal output by the tuner module (#210)(Col 4, Lines 50 – 53 and Col 10, Lines 29 - 34). The output by the Nyquist filter is applied to the inputs of the timing recovery circuit (#240, Fig.2) (Col 10,

Lines 57 – 63) wherein a phase-locked loop is used to generate the symbol clock signal (Col 5, Col 26 – 56 and Col 11, Lines 6 – 11).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used a bandpass filter after the delay multiplication circuit in order to be sent to the phase locked loop without any noise that would alter the symbol clock recovery.

Re claim 2, 7, 12 and 17, Bradley and Scarpa teach the limitations of claims 1, 6, 11 and 16. However, Bradley does not teach of the receiver being adapted to receive the ATSC DTV signal.

Scarpa teaches of demodulation of both QAM and VSB signals, (QAM and VSB ATV signals). It should be noted that advanced television (ATV) system is defined by the ATSC Standard A/53.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the receiver to be adapted to receive the ATSC signal where the timing recovery of every QAM, QPSK, ATSC is essential and do not differ with each other.

Re claim 5,10, 15 and 20, Bradley teaches of an analysis unit (synchronizer, Fig.1) adapted to determine for the symbol clock signal of the clock offset (Abstract, Lines 11 – 20).

Claims 3, 8, 13 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bradley and Scarpa as applied to claim 1 above, and further in view of Kuntz et al. (US 6,366,621).

Bradley and Scarpa teach all of the limitations as discussed above as in claims 1, 6, 11 and 16, except of the downconverting stage having a filter to pass the pilot and a mixer to mix the pilot with the signal.

Kuntz teaches of a method of estimating the phase of an electrical signal and more specifically to estimating the phase of a pilot tone or sinusoid embedded in a wideband digital signal modulating a radio frequency (RF) carrier signal (Col 1, Lines 6 – 10) for ATSC (Col 1, Lines 25 – 40). The IF signal (r(n), Fig.5) is processed through the pilot phase estimator (#130, Fig.5) for determining the phase of the pilot tone or IF carrier. The block of signal samples is sufficient to perform narrow band filtering (#154, Fig.7B) around the pilot signal and remove undesired digital modulation data for this process. The resultant phase value is combined with counter-rotating vector values in mixer (#132) and applied to a complex mixer (#134, Fig.5) for down converting the IF signal r(n) to baseband complex data values (x(n), Fig.5) (Col 8, Lines 12 – 17 and Col 10 Lines43 – 67to Col 11, Lines 1 – 19, Fig.5 and 7B).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the downconverter of Kuntz in ATSC receiver where the pilot filter would pass the pilot by removing undesired digital modulation data that would act as a phase tracker to eliminate phase drift in the demodulated signal and a mixer that would downconvert the IF signal to baseband.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aristocratis Fotakis whose telephone number is (571) 270-1206. The examiner can normally be reached on Monday - Thursday 7 - 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AF

CHIEH M. FAN
SUPERVISORY PATENT EXAMINER